

CLAIMS AMENDMENTS

1. (Currently Amended) Method for detecting and localizing a fire and/or the origin of a fire in one or more monitored areas $\{R_1, R_2, R_3, \dots, R_n\}$ comprising the following process steps:

- a) extracting air samples $\{6\}$ in each case representative of the room air of the respective individual monitored areas $\{R_1, \dots, R_n\}$ from said individual monitored areas $\{R_1, \dots, R_n\}$ through a common suction pipe system $\{3\}$;
- b) detecting at least one fire parameter in the air samples $\{6\}$ suctioned through suction pipe system $\{3\}$ with at least one sensor $\{7\}$ for detecting fire parameters;

~~characterized by the following process steps:~~

- c) blowing out the extracted air samples $\{6\}$ within suction pipe system $\{3\}$ by means of a blower or suctioning/blower device $\{8\}$;
- d) re-extracting air samples $\{6\}$ from the individual monitored areas $\{R_1, \dots, R_n\}$ through suction pipe system $\{3\}$ at least until the at least one sensor $\{7\}$ re-detects a fire parameter in air samples $\{6\}$;
- e) evaluating the time elapsed before the re-detecting of the fire parameter in the re-extracted air samples from process step d) in order to localize a fire or the site of an imminent fire in one of the plurality of monitored areas $\{R_1, \dots, R_n\}$; and
- f) emitting a signal indicating the development and/or presence of a fire in one or more of monitored areas $\{R_1, \dots, R_n\}$, wherein the signal contains further information for a precise localization of the fire in said one or more monitored areas $\{R_1, \dots, R_n\}$.

2. (Currently Amended) Method ~~in accordance with~~ as claimed in claim 1, further comprising the following process steps subsequent to process step a):

- a1) determining the flow rate to air samples $\{6\}$ in suction pipe system $\{3\}$ during the continuous extraction of respective air samples $\{6\}$ from individual monitored areas $\{R_1, \dots, R_n\}$; and
- a2) calculating the time necessary to fully blow out air samples $\{6\}$ located in suction pipe system $\{3\}$.

3. (Currently Amended) Method ~~in accordance with claim 1 or 2~~ as claimed in Claim 1, ~~characterized in that~~ wherein process step c) comprises the process step of determining the flow rate during said blowing out in order to calculate the time necessary to fully blow out the air samples $\{6\}$ located within suction pipe system $\{3\}$.

4. (Currently Amended) Method ~~in accordance with one of the preceding claims as claimed in Claim 1~~, further comprising the following process steps subsequent to process step d):
- d1) determining the flow rate to air samples {6} in suction pipe system {3} during the renewed extraction of respective air samples {6} from individual monitored areas $\{R_1, \dots, R_n\}$; and
 - d2) calculating the transit time of respective air samples {6} representative of the room air of the individual monitored areas $\{R_1, \dots, R_n\}$ during the renewed extraction of respective air samples {6} from individual monitored areas $\{R_1, \dots, R_n\}$.
5. (Currently Amended) Method ~~in accordance with one of the preceding claims as claimed in Claim 1~~, characterized in that wherein the air sampling performed in process steps a) and d) is realized by means of a suction device {5}, wherein the subsequent re-extraction of air samples performed in process step d) ensues with a suction line which is reduced in comparison to the suction line used in process step a).
6. (Currently Amended) Method ~~in accordance with one of the preceding claims as claimed in Claim 1~~ further including an auto-adjusting procedure comprising the following process steps:
- i) artificially producing a fire parameter at suction opening {4} at the most distant monitored area $\{R_n\}$ from the at least one sensor {7} over the entire time of the auto-adjusting procedure;
 - ii) suctioning air samples {6} from individual monitored areas $\{R_1, \dots, R_n\}$ through common suction pipe system {3} until the at least one sensor {7} detects the artificially-generated fire parameter in extracted air samples {6};
 - iii) blowing out extracted air samples {6} located in suction pipe system {3} by means of a blowing or suctioning/blowing device {8};
 - iv) renewed extraction of air samples {6} from individual monitored areas $\{R_1, \dots, R_n\}$ through suction pipe system {3} at least until sensor {7} redetects an artificially-generated fire parameter in air samples {6};
 - v) evaluating the transit time elapsed until the re-detection of the artificially-generated fire parameter in the re-extracted air samples performed in process step iv) in order to determine the maximum transit time for the suction pipe system;
 - vi) calculating the transit times for respective air samples {6} representative of the room air of individual monitored areas $\{R_1, \dots, R_n\}$ from individual

monitored areas $\{R_1, \dots, R_n\}$ based on the maximum transit times determined in process step v) and the configuration of suction pipe system $\{3\}$, in particular the distance between suction openings $\{4\}$, the diameter to the suction pipe system and the diameter to suction openings $\{4\}$; and

vii) storing the calculated transit times for respective air samples $\{6\}$ in a table.

7. (Currently Amended) Method ~~in accordance with~~ as claimed in claim 6, wherein the auto-adjusting procedure according to process step vii) further comprises the following process step:

viii) utilizing a correcting function on the calculated transit times stored in the table in order to update the transit time values occurring for the individual monitored areas $\{R_1, \dots, R_n\}$.

8. (Currently Amended) Method ~~in accordance with claim 6 or 7~~ as claimed in Claim 6, wherein the analysis of the transit time occurring in the event of a fire is made by comparing the occurring transit time with the respectively calculated transit times saved to the table in the auto-adjusting procedure.

9. (Currently Amended) Method ~~in accordance with one of the preceding claims~~ as claimed in Claim 1, wherein the analysis of the transit time occurring is made by comparing the occurring transit time with the respective transit times calculated theoretically for individual monitored areas $\{R_1, \dots, R_n\}$ in dependence on at least one of the following parameters: the length of the respective sections of the suction pipe system $\{3\}$ between the at least one sensor $\{7\}$ and the suction openings $\{4\}$ of the respectively monitored areas $\{R_1, \dots, R_n\}$ disposed in suction pipe system $\{3\}$; the effective flow cross-section of suction pipe system $\{3\}$ and/or the respective sections of suction pipe system $\{3\}$ between the at least one sensor $\{7\}$ and the respective monitored areas $\{R_1, \dots, R_n\}$; and the flow rate of the air samples $\{6\}$ in suction pipe system $\{3\}$ and/or in the respective sections of suction pipe system $\{3\}$ between the at least one sensor $\{7\}$ and the suction openings $\{4\}$ of the respective monitored areas $\{R_1, \dots, R_n\}$.

10. (Currently Amended) Fire detection device for detecting and localizing a fire and/or the origin of a fire in one or more monitored areas $\{R_1, \dots, R_n\}$ comprising a suction pipe system $\{3\}$ connecting said monitored areas $\{R_1, \dots, R_n\}$ which communicates with each individual monitored area $\{R_1, \dots, R_n\}$ by means of at least one suction opening $\{4\}$, a suction device $\{5\}$ for extracting representative air samples $\{6\}$ from individual monitored areas $\{R_1, \dots, R_n\}$ by means of suction pipe system $\{3\}$ and suction openings $\{4\}$, and at least one

sensor (7) for detecting at least one fire parameter in the air samples (6) suctioned through suction pipe system (3), characterized by a blowing device (8) for blowing out the air samples (6) sucked into suction pipe system (3) when the at least one sensor (7) detects at least one fire parameter in said extracted air samples (6), and by at least one indicator element which identifies the site of a fire in one of monitored areas $\{R_1, \dots, R_n\}$ and/or by a communication device which transmits information on the development and/or presence of a fire in one or more of said monitored areas and on the precise location of the fire in said one or more monitored areas to a location remote of the device.

11. (Currently Amended) Device ~~in accordance with~~ as claimed in claim 10, ~~characterized by~~ further comprising a controller (9) for a time-coordinated controlling of suction device (5) and blowing device (8) in agreement with a signal emitted by the at least one sensor (7) when said at least one sensor (7) detects at least one fire parameter in air samples (6).

12. (Currently Amended) Device ~~in accordance with claim 10 or 11~~ as claimed in Claim 10, ~~characterized by~~ further comprising a memory means for storing the transit time values.

13. (Currently Amended) Device ~~in accordance with one of claims 10 to 12~~ as claimed in Claim 10, ~~characterized by~~ further comprising at least one smoke generator arranged near a suction opening (4) and artificially generating a fire parameter for setting and testing the fire detection device.

14. (Currently Amended) Device ~~in accordance with one of claims 10 to 13~~ as claimed in Claim 10, ~~characterized by~~ further comprising at least one sensor (12) for measuring the flow rate of air samples (6) in the suction pipe system.

15. (Currently Amended) Device ~~in accordance with one of claims 10 to 14~~ as claimed in Claim 10, ~~characterized by~~ further comprising a processor (10) for evaluating a signal emitted by sensor (7) when said at least one sensor (7) detects a fire parameter in an air sample (6) and a control signal emitted by controller (9) to suction device (5) and/or blowing device (8).

16. (Currently Amended) Device ~~in accordance with one of claims 10 to 15~~ as claimed in Claim 10, ~~characterized in that~~ wherein the diameters and/or the cross-sectional shape to individual suction openings (4) is configured contingent upon respective monitored areas $\{R_1, \dots, R_n\}$.

17. (Currently Amended) Device ~~in accordance with one of claims 10 to 16 as claimed in Claim 10, characterized in that~~ wherein the diameters and/or the cross-sectional shape to the individual sections of suction pipe system (3) between the at least one sensor (7) and the respective monitored areas (R1,...,Rn) is configured contingent upon the respective monitored areas (R1,...,Rn).

18. (Currently Amended) Device ~~in accordance with one of claims 10 to 17 as claimed in Claim 10, characterized in that~~ wherein the suction device (5) and the blowing device (8) are configured together as one blower (11) which changes the direction it conveys air in response to a control signal from controller (9).

19. (Currently Amended) Device ~~in accordance with~~ as claimed in claim 18, ~~characterized in that~~ wherein the blower (11) is a reversing-rotation fan.

20. (Currently Amended) Device ~~in accordance with~~ as claimed in claim 18, ~~characterized in that~~ wherein the blower (11) is a fan having ventilation flaps.

21. (Currently Amended) Application of the device ~~according to one of claims 10 to 20 as claimed in Claim 10~~ as a fire detection component of a fire extinguishing system for activating the introduction of a fire extinguishing agent in one of monitored areas (R1,...,Rn).